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Antecedents of Suicide among Youth Aged 11–15: A Multistate Mixed Methods Analysis

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Abstract

Suicide is the second leading cause of death for youth aged 11 to 15, taking over 5,500 lives from 2003 to 2014. Suicide among this age group is linked to risk factors such as mental health problems, family history of suicidal behavior, biological factors, family problems, and peer victimization and bullying. However, few studies have examined the frequency with which such problems occur among youth suicide decedents or the context in which decedents experience these risk factors and the complex interplay of risk that results in a decedent's decision to take his/her own life. Data from a random sample of 482 youth (ages 11–15) suicide cases captured in the National Violent Death Reporting System from 2003 to 2014 were analyzed. The sample had fewer girls than boys (31 vs. 69 %) and comprised primarily White youth (79 %), but also African Americans (13 %), Asians (4 %), and youth of other races (4 %). Narrative data from coroner/medical examiner and law enforcement investigative reports were coded and analyzed to identify common behavioral patterns that preceded suicide. Emergent themes were quantified and examined using content and constant comparative analysis. Themes regarding antecedents across multiple levels of the social ecology emerged. Relationship problems, particularly with parents, were the most common suicide antecedent. Also, a pattern demonstrating a consistent progression toward suicidal behavior emerged from the data. Narratives indicated that youth were commonly exposed to one or more problems, often resulting in feelings of loneliness and burdensomeness, which progressed toward thoughts and sometimes plans for or attempts at suicide. Continued exposure to negative experiences and thoughts/plans about suicide, and/or self-injurious acts resulted in an acquired capacity to self-harm, eventually leading to suicide. These findings provide support for theories of suicidal behavior and highlight the importance of multi-level,

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Disclaimer The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

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Compliance with Ethical Standards

Ethical Approval This article does not contain any studies with living human participants or animals performed by any of the authors.

Informed Consent Data used in this study involved circumstances surrounding the suicide deaths of de-identified deceased individuals. Thus, for this type of study informed consent is not required.

Conflict of Interest The authors declare that they have no competing interests.

comprehensive interventions that address individual cognitions and build social connectedness and support, as well as prevention strategies that increase awareness of the warning signs and symptoms of suicide, particularly among family members of at-risk youth.

Keywords

Youth suicide; Precipitating factors; Qualitative analysis

Introduction

Suicide is the second leading cause of death among youth and young adults 11 to 15 years old according to 2014 data from the Centers for Disease Control and Prevention (CDC 2016). The suicide rate among this age group has doubled since its decade low in 2007, from 1.6 to 3.2 deaths per 100,000 population (CDC 2016). Suicidal ideation is even more common among this group of youth and adolescents. According to CDC's 2015 national Youth Risk Behavior Survey, 17.7% of high school students reported seriously considering suicide in the past year, and 14.6% made plans to carry out suicide (Kann et al. 2016). Research suggests that early adolescence in particular is a time period marked by important school-age and biological transitions, such as a move from elementary to middle and middle to high school, along with the onset of puberty. This time period can be associated with increased stress, depressive and internalizing symptoms, suicide, and other negative health outcomes (Bolger et al. 1989; Robinson et al. 1995; Windle et al. 2008). While only a small proportion of individuals die by suicide during this time period, in light of the increasing trends in suicide among youth and adolescents, and with the goal set forth by the National Action Alliance for Suicide Prevention to reduce suicides by 20% by 2020, the need to identify modifiable factors that may help prevent youth suicide has never been as imperative as it is now.

A review by Gould et al. (2003) identified numerous risk factors for youth suicide related to characteristics of youth and their social environments. These factors involved individual-level and relationship-level problems, with very few community/environmental-level factors identified. Risk factors that span this social ecology (Dahlberg and Krug 2002) include psychopathology, family history of suicidal behavior, biological factors, parental divorce, poor parent-child communication habits, and contagion or imitation of suicidal behavior sometimes fueled by media coverage sensationalizing these violent acts. More recent studies have also linked peer victimization, bullying victimization and perpetration, cyberbullying, and sexual minority status to suicidal ideation and behaviors among youth (Holt et al. 2015; Stone et al. 2014; Van Geel et al. 2014).

Identifying the imminent and critical antecedents of suicidal behavior and placing them within the context of theories may help researchers to better understand and prevent lethal self-harm. For example, Sabbath's (1969) family systems theory of adolescent suicidal behavior posits that suicidal youth may perceive themselves as nonessential, burdensome family members. The interpersonal theory of suicidal behavior expands upon Sabbath's theory and suggests that individuals at risk for suicide may suffer from three inter-related

symptoms: thwarted belongingness, or a feeling of not belonging to a family or peer group; perceptions of burdensomeness; and an acquired capability to engage in harmful behavior or an acquired tolerance of pain, which can be physical or mental (Van Orden et al. 2010, 2008).

Youth suicide prevention programs have been developed to impact modifiable risk factors, some of which address constructs included in these theories, such as reducing thwarted belongingness by enhancing connectedness. However, these programs have been associated mostly with reductions in suicidal ideation, with limited evidence of effects on suicidal behavior (see Aseltine et al. 2007; Gould et al. 2003; Katz et al. 2013). To develop more effective interventions, it is critical that the causal pathways leading to suicide are better understood, especially those that take into account the dynamic interplay of individual-, relationship-, and community-level factors (Magnusson and Stattin 2006). In addition, more research is needed on *imminent warning signs* (Rudd et al. 2006) for suicide and how such signs may play a role in impacting a youth's decision to die by suicide. As these pathways become clearer, theories of suicidal behavior can be honed or expanded to inform future prevention strategies.

Unfortunately, few data sources exist that permit analyses of the interplay of risk factors and other proximal circumstances that influence suicidal behavior. The National Violent Death Reporting System (NVDRS) is one such system and is a valuable source of information because it is designed to identify and characterize risk factors from multiple sources, including coroners/medical examiners and law enforcement officials. Other studies have used these sources to identify common precipitators of suicide deaths among middle-aged men and women and to examine the frequency and characteristics of intimate partner homicide and homicides-followed-by-suicide (Logan et al. 2008; Schiff et al. 2015; Smith et al. 2014; Stone et al. 2016). However, to date, NVDRS data have only been used to quantify or tally descriptive characteristics of circumstances related to youth suicide (Karch et al. 2013), but not to qualitatively examine how these circumstances collide. Karch and colleagues (2013) used three years of law enforcement and coroner/medical examiner report data from the NVDRS and quantified the common precipitators of suicide among youth 10 to 14 years old, finding that suicide decedents often experienced a recent crisis, mental health problems, and/or dating partner problems. While this study provided an overview of youth suicide cases; more rigorous qualitative analytic methodologies involving thorough review and coding of law enforcement and coroner/medical examiner narrative data are still needed to investigate other possible precipitators such as the specific types dating partner problems and school problems (e.g., fights, breakups, bullying and teasing at school, sports-related problems).

Psychological autopsies, which involve synthesizing relevant information on decedents' lives through medical records and postmortem interviews with family members and acquaintances, are helpful in describing the proximal precipitators and psychological circumstances of suicide in great detail (Isometsä 2001). For example, Houston et al. (2001) conducted a psychological autopsy study of 27 youth aged 15 to 24 who had died by either suicide or an undetermined cause. Through informant interview and medical and coroner records, they found that 70% of their sample had a diagnosed mental illness, 50% of whom

suffered from depression. Decedents also suffered from relationship and legal problems that contributed to their suicide. Another psychological autopsy study of 120 youth who died by suicide in New York indicated that 59% of its sample had a diagnosable mental illness, and almost half had symptoms lasting more than three years and had received mental health treatment (Shaffer et al. 1996). Finally, a psychological autopsy study of youth who died by suicide in Utah quantified the frequency with which parents, siblings, friends, distant relatives, and other informants reported problems experienced by the decedent after his/her death, finding that 65% of the sample had a psychiatric diagnosis and demonstrating that parents and friends observe the warning signs of suicide more frequently than other informants (Moskos et al. 2005). Although most psychological autopsy studies like those described here collect qualitative data, the majority still simply tally informant survey responses in an attempt to provide a frequency with which certain characteristics (e.g., mental health problems) occurred among their sample of decedents. Thus, these studies typically do not describe the complex interaction of risk experienced by suicide decedents. Moreover, psychological autopsy studies, which are conducted seemingly sparingly, involve labor- and time-intensive data collection and analysis efforts, often resulting in small, localized samples, thereby limiting the generalizability of their findings.

The Current Study

In the present study, we built upon research that has used quantitative NVDRS data to characterize suicides of youth aged 11 to 15 years old—a group that theoretically experiences distinct stressors related to adolescent development compared to older adolescents (Bolger et al. 1989; Robinson et al. 1995). Additionally, similar to psychological autopsy studies, we reviewed summaries of data collected on suicides among 11 to 15 year olds through interviews conducted by law enforcement and coroner/medical examiners with decedents' family, friends, and acquaintances and conducted qualitative analyses to provide a rich illustration of *all* known circumstances surrounding youth suicides. The purpose of this study was to identify common characteristics and antecedents of suicides among youth across the U.S. using narrative data from law enforcement and coroner/medical examiner suicide investigations in 17 states participating in the NVDRS. A goal of this research was to place the identified suicide antecedents within the context of a theoretical model that explains suicidal behavior to inform targeted and universal prevention programming. Drawing from two existing theories regarding suicide and suicidal behavior, we hypothesized that antecedents in three domains would emerge during our content analysis of law enforcement and coroner/medical examiner narratives of youth suicides: feelings of loneliness or burdensomeness, which we presumed may be family- or peer group-related; familial tension or problems with parents; and a build-up of tolerance for engaging in self-harm, exhibited through non-suicidal self-harm, suicidal ideation, and previous suicide attempts.

Method

Data Source and Study Population

A total of 1,606 suicides among youth aged 11–15 were recorded in 17 of the 18 U.S. states that participated in the NVDRS from 2003 to 2014[1]. The NVDRS collects quantitative and qualitative details on violent death incidents, including suicide. Data sources for the NVDRS include death certificates, coroner/medical examiner reports, law enforcement reports, and toxicology reports (CDC 2014). Much of the information regarding the circumstances preceding suicide events is collected from next-of-kin interviewed by law enforcement and coroner/medical examiner death scene investigators. The NVDRS records an extensive amount of information on each incident based on multiple reports as well as law enforcement and coroner/medical examiner reports. NVDRS data abstractors develop brief summaries containing details regarding known circumstances, or precipitating factors, that preceded the death. Data abstractors are trained to include only factors from the law enforcement and coroner/medical examiner reports that seemingly contributed to the suicide (CDC 2015).

A random selection of 30% (n = 482) of NVDRS suicide cases among 11 to 15 year olds—all with known circumstances—were included in this study. This sample size was deemed small enough to conduct thorough content analysis of case narratives, which requires extensive time and labor, yet large enough to reach qualitative saturation (i.e., the point at which no new themes emerge from the data; Strauss and Corbin 1998) and to obtain descriptive data regarding prevalent suicide precipitators.

Sample characteristics—Sample characteristics including decedent sex, race, age, and means of suicide are provided in Table 1. Using chi-square tests of independence, we did not find any significant differences between our selected sample (n = 482) and the remaining youth decedent population of these ages (n = 1,124; data not shown) contained in the NVDRS.

Content Analysis

Content analysis of law enforcement and coroner/medical examiner data took place in three phases. In phase one, a combination of conventional content analysis and directed approaches to content analysis (Hsieh and Shannon 2005) were used to develop a comprehensive coding guide; the coding guide was created based on theoretical understanding of suicidal behavior and was then modified using an iterative process that involved narrative review and open coding (i.e., creating overarching code categories after reviewing narratives; Strauss and Corbin 2007). This process resulted in a coding guide that included detailed codes for the following: the suicide decedent's emotional state, precipitating health circumstances (e.g., physical and mental health problems experienced by decedent), family medical history, history of adverse childhood experiences, precipitating stress-related circumstances (e.g., school and/or bullying-related problems, dating partner

[1]Data included from Alaska, Colorado, Georgia, Kentucky, Maryland, Massachusetts, New Jersey, New Mexico, North Carolina, Ohio, Oklahoma, Oregon, Rhode Island, South Carolina, Utah, Virginia, and Wisconsin. California collected data from 2005–2008; however, these data were excluded because collection was not statewide.

problems, family-related stressors), evidence of premeditation, prevention opportunities, and toxicology results. Within each of these overarching categories, detailed codes were developed for more nuanced narrative data (e.g., whether bullying was confirmed vs. perceived, type of mental health problem experienced, type of dating partner problem). The final coding guide (Table 2) and law enforcement and coroner/medical examiner narrative data for each case were entered into NVivo 10.0 qualitative data analysis software.

In phase two of data analysis, three study team members (KH, AV, and RL) coded 30 identical case narratives. A coding comparison query was run in NVivo, and a kappa coefficient of 0.90 was obtained, indicating an excellent rate of inter-coder agreement. An additional 452 cases were split among the three team members and coded using the final coding guide.

In the third and final phase of analysis, overarching code categories were reviewed in NVivo. Categories that were frequently coded in the narrative data were closely analyzed for repetitive themes using the constant comparative method (Glaser and Strauss 1967). Further, excerpts of text filed in the most frequently coded categories were quantified as well as identified as either a school-, relationship-, or individual-level factor in order to provide detail regarding the sample-specific prevalence of key precipitators of suicide.

Results

Suicides were precipitated by a range of problems representing multiple levels of the social ecology, with the most common types of problems precipitating suicide being family, peer, and dating partner relationship problems, followed by individual-level factors such as mental health and substance abuse problems, and school-related struggles, respectively. It was also common for youth to *simultaneously* experience multiple types of problems spanning the social ecology. Overall, the narrative data reviewed provided insight regarding the process of suicide, with extenuating circumstances, including relationship, individual, and school problems (often in combination) resulting in non-suicidal self-harm, thoughts, and/or plans about death. In many of the cases reviewed, such exposure to stressful stimuli and maladaptive coping behaviors likely resulted in the decedents' acquired capacity to act on suicidal ideation using lethal means. Excerpts from law enforcement and coroner/medical examiner narratives illustrating the themes and suicidal processes that emerged during qualitative analysis are provided in Table 3.

School or School-Related Social Problems

School or social problems were reported in 40% (n = 193) of suicide cases. Among these cases, school disciplinary problems (n = 43, 22 %) and non-specific school problems (n = 50, 26 %) contributed to more suicides than any other type of school-related problem. Non-specific school problems were characterized by law enforcement and coroner/medical examiner narratives through broad statements such as "problems at school" with no specific details noted. School disciplinary problems that were specified, such as suspension, occurred in conjunction with other possible contributors of suicide, such as arguments with parents, punishment, or feelings of hopelessness or depression, in 30 (70 %) of 43 cases. For instance, one decedent left suicide notes stating he thought he would be a failure in life and

therefore he was going to end his life to not disappoint anybody. The victim was a good student and did not display signs of suicide. However, he had recently been disciplined at school because of an academic problem. The parents had disciplined the victim the evening prior to his death.

Bullying or teasing at school was apparent in 22% (n = 43) of the 193 cases that involved school or social problems and in 9% of total cases included in this study. Thus, bullying alone was not a leading contributor to the broader group of suicides related to school problems. Instead, when bullying was noted, it often overlapped with other precipitators of suicide; for example, one case indicated that the victim's mother was reported to have a problem with alcohol, which often led to poor parenting. She also had abusive relationships, which the victim witnessed. The victim suffered from physical health problems, physical and psychological abuse from her family, and was socially excluded by other youth. Still, bullying was reported more frequently than general problems with friends, which were reported in approximately 6% (n = 5) of cases with school-or social-related problems.

Academic problems were noted in 29 cases (6 %) that involved school problems. In 15 (52 %) of these 29 cases, academic problems were experienced in conjunction with another problem, such as an argument with parents. For instance, one decedent "had received a bad school report card and was yelled at by his parents." Another victim "had been experiencing difficulty at school with grades and had been 'acting out' lately."

Additionally, informants interviewed during the death investigation and/or the suicide decedents themselves sometimes disclosed to others or through journal entries a sense of thwarted belongingness (Van Orden et al. 2010), or a perception of difficulty "fitting in," either in general social contexts or at school. For example, one victim reportedly did not have many friends and had been in counseling due to problems at school. The victim was reportedly happy at home, but very unhappy at school and had difficulty making friends. Another victim's health records indicated that she continued to have problems with her primary support group, at school, and in social relationships.

Relationship Problems

Relationship-level problems were common among this sample of youth. Family problems were most frequently noted in this category, with 56% (n = 267) of youth demonstrating a problem with a relative. Frequently, family stress resulted in arguments with parents, followed by a punishment, which was often immediately (i.e., the same day) followed by suicide. Other family-related stressors included living within blended families (e.g., with stepparents or step-siblings; n = 44, 9 %), parental divorce (n = 33, 7 %), and a recent move (n = 29, 6 %). For instance, one case narrative indicated that the victim's mother had been having problems with the victim being argumentative and acting out. The family had recently moved to a new house. On the evening of the suicide, the victim was upset and argued with his mother's partner. The arguing continued until the partner disciplined the boy. They found the boy deceased in his room later that evening. In this case, the victim also had a history of suicidal ideation and engaged in self-harm during arguments with his parents. Finally, thwarted belongingness also emerged as a theme that co-occurred with family problems. For instance, some cases describing arguments with parents or living within

blended families were accompanied by victim disclosures indicating that they thought their family or parents “didn’t care” about them.

Problems with dating partners were another relatively frequent precipitator of youth suicide with 20% (n = 95) of cases involving some sort of dating dispute. Many cases cited an argument, a break-up, or both. For example, one case involving a female noted that the victim was at a school social activity where she saw her ex-boyfriend with another girl. She left the activity and was later found deceased. In another case, while the victim and his girlfriend were breaking up, he told her he was going to kill himself. Several hours later, he was found deceased.

Individual Problems

Many of the case narratives included in our study documented individual-level problems, including mental health problems, alcohol or substance abuse, prior exposure to a friend or family member’s suicide, and experience with non-suicidal self-injury, prior suicidal ideation and/or attempts.

Mental health problems were documented in 249 cases (52 %) included in our sample. Over half (n = 149, 60 %) of the mental health problems documented included a diagnosis of depression. Other mental health problems included Attention Hyperactivity Deficit Disorder (ADHD; n = 37, 8%) and other mental illnesses (n = 62, 12 %), such as bipolar disorder (n = 17) obsessive compulsive disorder (n = 4), anxiety (n = 8), schizophrenia (n = 2), and other non-specified mental health problems (n = 31). Additionally, indication of mental health problems was typically accompanied by a reported recent crisis or other stressful incident. Alcohol and/or substance abuse or misuse was involved in a total of 37 cases (8 %). Nine victims were reportedly drinking immediately prior to their suicide, eight were using drugs, and three were both drinking and using drugs immediately before dying. Twenty-one victims (4%) regularly abused drugs, ten (2 %) regularly abused alcohol, and eight (2 %) regularly abused both alcohol and drugs prior to dying by suicide.

Evidence of non-suicidal self-injury was documented in 43 cases (9 %) and typically included cutting, but other forms of self-mutilation (e.g., burning) were also noted. For instance, one case indicated that a victim had “scars on his wrists that appeared to be from cutting.” His mother confirmed that he had a history of cutting himself. Also of note in this case is that other risk factors for suicide were identified, including peer suicides, an argument with family, and tensions with friends.

Twenty-five youth (5 %) in this sample had either a family history of suicide or had been exposed to a friend or acquaintance’s death by suicide. One case narrative indicated that the victim made statements about wanting to be with a parent who died years ago. The records indicated that the victim used the same method that other family members who had died by suicide had used. Four decedents who had been exposed to a friend’s suicide were suspected to have been involved in a suicide pact. In two of these cases, the suicide occurred immediately following the first victim’s suicide, using the same firearm. In another case, the victim died without anyone nearby, but his death was preceded by two other youth suicides in the same county within a 24 hour period. Four cases indicated the presence of a potential

suicide cluster, marked by two or more seemingly related other youth suicides in the school or surrounding community. One case involved the railway suicide of a boy whose death followed nine other suicides of students from his high school over a four-year period. Additionally, according to law enforcement reports, two victims out of the entire sample had allegedly entered a suicide pact with another friend or dating partner, but the other party involved in the pact did not ultimately die by suicide.

Finally, evidence of suicidal ideation was not uncommon among this sample of youth. In fact, 54% (n = 262) of youth demonstrated at least one kind of premeditative activity. The most common form of premeditation was leaving a suicide note (n = 150, 31 %). Twenty-seven percent (n = 131) of the sample had a history of suicidal ideation, while only 16% (n = 77) had a history of suicide attempts. Most youth who disclosed intent to die by suicide (n = 125, 26 %) did so to a family member, friend, or dating partner, and this was often done during or following an argument. For instance, one victim had an argument with his parents before his death, and records indicated that the punishment made him angrier, and "during the argument the victim threatened to kill himself." Ten percent of youth (n = 48) used social media or text messages to disclose their intent to die by suicide or to talk about suicide in general. Another 7% (n = 33) of youth expressed thoughts about suicide through journal writings that detailed different types of problems the decedents experienced (e.g., "Police found a journal in victim's bedroom that stated how unhappy she was and made numerous references to ending her life").

Co-Occurrence of Risk Factors

Almost 60% (n = 281) of youth experienced multiple types of problems spanning the social ecology. The most common, co-occurring problems involved relationship and school problems (n = 191, 40 %), often characterized by a disciplinary or academic problem at school in combination with an argument with a parent. The combination of individual and relationship problems (n = 184, 38 %) was almost equally as prevalent as school plus relationship problems; these comorbid problems were often characterized by the decedent experiencing an individual-level problem such as mental illness in combination with a relationship problem, such as a break-up or an argument with parents. Over one-third (n = 173) of decedents experienced both an individual problem and a school or social problem. For example, one decedent had ADHD and major depressive disorder. This youth had made several suicide attempts in the past, and had recently been expelled from school. Finally, almost one out of every five decedents in this sample (n = 88, 18 %) experienced all three types of problems—individual, relationship, and school/social problems. For instance, one victim had a history of bipolar disorder, was suspended from school, and had been recently punished by his parents for criminal behavior.

Progression toward Suicidal Behavior

Narrative data demonstrated a common progression toward suicidal behavior among the decedents in our sample. First, narratives indicated that victims most often experienced multiple problems—either within one level of the social ecology (e.g., an argument with a parent, plus an argument with a boyfriend, plus punishment by a parent) or across levels (e.g., depression, plus a recent move from one residence to another, plus bullying at school).

Second, exposure to these problems often resulted in feelings of loneliness and burdensomeness, which progressed toward thoughts, disclosure, and sometimes plans for or attempts at suicide. For example, one decedent's friend advised law enforcement during an interview that "the victim had told her the previous week that he felt like no one cared about him and that he wanted to kill himself." Another victim suffered from depression, had excessive school absences, resulting in failing grades "which added to her depression," did not have many friends, did not have a boyfriend, "was a cutter," and had been hospitalized recently for a suicide attempt. Another victim "had recently argued with her parents; she was upset when this resulted in her cell phone being taken away. The family had relocated several months before, and as a result the victim was seen as an outsider [at school]. [The day of the incident], she voiced possible suicidal ideations to a family member."

Further evidence in support of this progression toward suicidal behavior came directly from victims' suicide notes, which often indicated a build-up of pain and suffering and an inability to cope in another way. For instance, one victim's note stated that "he was in so much pain and tried to deal with it, but he just couldn't do it anymore and wanted to die." Another victim indicated that he had tried to cope with his pain for so long, but that he had finally decided to take his own life, stating, "I just want the pain to go away."

In a small number of cases (n = 27, 6 %), suicides were identified as impulsive in nature. Impulsivity was characterized by an immediate, unplanned response to an acute or recent negative experience or situation, such as a breakup, argument, or punishment. In these cases, the progression toward suicide described above was not entirely supported. Instead, these impulsive suicides, which were precipitated by one or more problems, were *not* known to be precipitated by premeditation and usually did not demonstrate the gradual acquired capacity to inflict self-harm in response to long-term ideation or exposure to problems. In some cases, however, victims did disclose suicidal intent; unfortunately, they did so providing little, if any, time in which to effectively intervene or respond to prevent the suicide. For instance, one case narrative stated the 15 year old "victim and her mother had an argument, and victim became upset and fled. During this argument she told her mother she was going to kill herself." In another case, a 13 year old was having disciplinary problems at school and became upset when confronted by his mother, running to his room and shutting the door. Ten minutes later, the victim was found deceased. In another case, upon finding her boyfriend deceased from a self-inflicted gunshot wound after they had an argument, a 15 year old girl used the same firearm to immediately kill herself. Finally, one narrative described a victim as "quick to become emotional," indicating that he had problems managing his anger and that "he would mention his wishes not to live, but these statements were considered to be spur-of-the-moment and anger-driven rather than disclosures of intent."

Discussion

Little research has been conducted to identify the proximal events leading to suicide among youth, barring small, localized psychological autopsy studies and quantitative studies that fail to examine the dynamic interplay of specific experiences and the context in which they occur (Houston et al. 2001; Karch et al. 2013; Moskos et al. 2005; Shaffer et al. 1996).

Given that youth's coping skills are not fully developed (Dumont and Provost 1999; Zimmer-Gembeck and Skinner 2008), it is necessary to gain an understanding of the imminent warning signs and precipitators of suicide among youth. Building the evidence around such warning signs, identifying common antecedents of suicide, and understanding similarities between youth's progression toward suicidal behavior can help to inform theories regarding suicidal behavior and suicide prevention strategies specifically targeting youth and adolescents.

Our results indicate that youth suicide is a result of a constellation of risk factors, as opposed to only one specific type of problem. Multiple problems spanning the social ecology are often described in death investigation narratives. The problems these youth experienced "piled up" (e.g., parental fighting accompanied parental divorce, which preceded a family move, which accompanied arguing between parent and child), potentially making it seem as if one particular negative experience was the final straw that resulted in suicide. However, our results demonstrate that youth experienced many problems simultaneously and over time, thus making it impossible to pinpoint one specific event that led them to take their life.

Three main types of problems—school-, relationship-, and individual-level problems—emerged from the qualitative data we examined, with relationship-level problems being the most frequently noted, and conflict within parent-child relationships related to arguments, punishment, and blended families being the most common of these problems. However, individual-level problems, particularly mental health problems, were the second most commonly noted contributor to suicide. Other individual-level problems included alcohol and substance abuse and a history of self-harm ideation or behavior among a minority of youth. Finally, while school-related problems were noted fairly often as precipitators of youth suicide, bullying or teasing at school was only apparent in 43 of the 193 cases that involved school or social problems, and often, parents and school officials were seemingly unaware of the problem. Thus, bullying alone was not a prevalent contributor to the broader group of suicides related to school problems—a finding consistent with emerging literature (CDC 2014).

The results from this study are in line with other studies identifying risk factors for youth suicide at multiple levels of the social ecology. Many studies have indicated that individual-level factors, particularly mental illness, are risk factors for suicidal ideation and suicide (Gould et al. 1998; Shaffer et al. 1996; Shafii et al. 1988). At the relationship level, family discord in the forms of parental divorce, child maltreatment, and poor parent-child relationships have been associated with an increased risk of suicide among youth (Bridge et al. 2006), as have other family-related stressors, such as a recent change or multiple changes in residence (Cash and Bridge 2009; Qin et al. 2009). These factors were frequently noted in case narratives included in the present study (Cash and Bridge 2009).

Additionally, our results provide evidence in support of both Sabbath's family systems theory of adolescent suicide (1969) and Joiner's interpersonal theory of suicide (2010) in that this sample of youth demonstrated a consistent pattern toward suicide. For instance, conflict with parents and feelings of unimportance, thwarted belongingness, and perceived burdensomeness as a family member were prevalent among our sample and described

particularly in relation to the victims' premeditative thoughts about suicide. Several case narratives included quotes from parents such as "he didn't want to be around anymore," and the family "would be better off" without the victim. Additionally, Joiner's theory extends beyond the family into social circles where victims are described to be lacking connectedness with their peers and with the school environment in general—both risk factors that were prevalent among this sample. Further, Van Orden et al. (2010) described perceived burdensomeness not only as perceived liability, but also as affective thoughts of self-hatred, which were apparent among our sample—narratives frequently indicated that youth were angry with themselves and had low self-esteem. Finally, the interpersonal theory of suicide also delineates an acquired capacity to act on suicidal ideation through the cumulative exposure to painful or threatening experiences. Youth who previously engaged in non-suicidal self-injury and/or attempted suicide lend support to this component of the theory, as their continued non-suicidal and/or suicidal behaviors may have served as an accumulation of exposure to painful stimuli, allowing youth to build up the required capacity to act on their suicidal thoughts and plans.

Suicides identified as impulsive during our analyses represent one exception to the standard progression toward suicide theme which emerged from our data and do not align well with Sabbath's and Joiner's explicit theories of suicidal behavior. However, Joiner's theory implies an indirect pathway toward suicide for impulsive individuals, indicating that a deficit in impulse control is an indicator of other disorders, such as conduct disorder and intermittent explosive disorder, and these disorders are associated with an increased chance of acting on suicidal thoughts. In fact, Van Orden and colleagues (2010) argue that the tendency to be impulsive, in and of itself, may increase risk for lethal self-harm because impulsivity is inherently a painful, fear-inducing characteristic.

Implications

The qualitative findings from this study underline results from previous research and have important implications. For instance, the finding that youth suicide is precipitated by myriad social and individual-level factors highlights the importance of multi-level, comprehensive interventions that address individual beliefs and cognitions while also building and maintaining important community, family, and peer relationships through strong social engagement, connectedness, and support.

Further, given our finding that many youth suffered from mental health problems, targeted approaches to combat suicidal behavior among those at high risk, particularly those who have expressed premeditative symptoms, may help to prevent these tragic deaths. Many of the problems experienced by our sample of youth decedents were known to school or medical personnel who previously treated them. Gatekeeper training (e.g., Walrath et al. 2015) to increase the awareness of salient risk factors among youth may help to effectively prevent destructive self-harm.

Finally, many of the youth in our sample disclosed suicidal intent or had suicidal thoughts prior to their suicide. As was the case for several deaths, one victim's mother attributed the victim's behavior to "attention seeking;" and one victim's boyfriend indicated that the "victim often talked about killing herself, but he did not take her threats seriously that day."

This finding demonstrates the importance of heeding disclosures of suicidal intent and ideation, taking them seriously, and seeking help from service providers when necessary. In addition to implementing crosscutting violence prevention programs and gatekeeper training, linking youth to other services through research-and evidence-based screening programs at school, in primary care settings, or emergency departments, and integrating wrap-around services into a comprehensive care system within these settings may also be a promising practice for reducing suicidal ideation and behavior (VanDenBerg 1993).

Limitations and Strengths

Though NVDRS narrative data can provide rich detail regarding the stressful events experienced by youth who have died by suicide, data quality varies by state and incident, and the law enforcement and coroner/medical examiner reports are limited to information provided by next-of-kin, parents, friends, and others familiar with the decedent, who may not know all of the details regarding the victim's life or his/her decision to die by suicide. Additionally, those interviewed during the suicide investigation process may not feel comfortable sharing intimate details of their loved one's life. Suicide and its contributors are often stigmatized (Sudak et al. 2008), which may prevent people from fully disclosing what they know. In some cases, few details are provided because informants may not have been aware of problems the decedents experienced, or information from suicide notes and other data sources was not available. For instance, given findings from several studies demonstrating a significant association between sexual minority status and suicidal ideation and suicide risk (Kann et al. 2016; Russell and Joyner 2001; Stone et al. 2014), it is important to note the limitation that data on decedents' sexual orientation may not be accurately captured through informants' reports. Further, the small sample size used in this study and the lack of data from every state, limit our ability to generalize these findings.

Notwithstanding these limitations, this study has several strengths. It is the first thorough qualitative analysis of NVDRS data on youth suicide. Although psychological autopsy studies use interview data from deceased individuals' friends and family similar to that obtained through the NVDRS to acquire information on suicide antecedents, such studies are expensive and time-consuming because of the primary data collection involved. The data for the current study were abstracted directly from the NVDRS, thereby providing an efficient manner through which to study common precipitators of youth suicide. Further, although the sample size for this study was small by quantitative standards, using NVDRS data allowed for the study of a relatively large sample of individuals for a qualitative study and resulted in the emergence of themes that provide further evidence in support of quantitative studies previously conducted. Finally, this study identified several practical points of intervention and prevention.

Conclusions

This study reveals that the circumstances preceding suicide among youth typically involve an interplay of multiple individual, social, familial/parental, and school related problems, which often compile and result in a progression toward suicide. These findings highlight the importance of multi-level, comprehensive interventions that address individual cognitions

and build social connectedness and support (CDC 2009). Prevention strategies with demonstrated impact on child abuse and neglect, sexual violence, dating violence, youth violence and suicide are highlighted in technical packages developed by CDC in an effort to guide communities toward implementation of evidence-based programs (Basile et al. 2016; David-Ferdon et al. 2016; Fortson et al. 2016; Niolon et al. Forthcoming 2017; Stone et al. Forthcoming 2017). The overlap in risk and protective factors among these multiple types of violence is clearly documented (Wilkins et al. 2014). Comprehensive violence prevention programs with demonstrated impact on multiple types of violence that have shared risk and protective factors with suicide may hold promise for reducing youth suicide downstream by preventing other types of violence associated with suicidal behavior (e.g., dating violence, peer violence) and helping youth to improve coping skills, build healthy relationships, and enhance social connectedness (e.g., Kellam et al. 2012; Wilcox et al. 2008; Wyman et al. 2010). Additionally, prevention strategies that increase awareness of the warning signs and symptoms of suicide, particularly among friends of at-risk youth, such as Signs of Suicide (Schilling et al. 2016), may also be effective at preventing youth suicide given that so many of the cases included in this study involved disclosure of suicidal ideation to friends. Finally, programs that enhance parenting and family skills and reduce risk factors for suicide, such as anxiety and depression (e.g., the Incredible Years; Webster-Stratton et al. 2008; Webster-Stratton et al. 2011), or address family problems, particularly arguments with and punishment by parents may also help to prevent youth suicide. Interventions that can interrupt the interaction of these types of problems before they snowball might prevent youth from falling into a state of hopelessness and helplessness to where they believe suicide is their only option.

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Table 1

Sample characteristics of youth who died by suicide, 17 states, 2003–2014

	n	%
Sex		
Male	335	69.5
Female	147	30.5
Race		
White	380	78.8
African American	61	12.7
Asian	17	3.5
Other	22	4.5
Unknown	2	0.4
Age (Mean, SD)	13.99	1.16
11	23	4.8
12	35	7.3
13	84	17.4
14	123	25.5
15	217	3
Means of suicide		
Suffocation	285	59.1
Firearm	163	33.8
Poisoning	18	3.7
Other	15	3.1
Missing	1	0.2

Table 2

Qualitative topic codes assigned to law enforcement and coroner/medical examiner narrative text on youth suicide decedents in the national violent death reporting system

Overarching code	Subcode
Precipitating mental health circumstances	Current depressed mood
	Untreated/undiagnosed mental health problems
	Depression
	Anxiety
	PTSD
	Other
	Diagnosed mental health problems
	Depression
	Anxiety
	PTSD
	ADHD
	Other
	Treatment for mental health problems
	Prescribed medication
	Prescribed medication by a physician, but did not take it according to directions
	Received counseling/therapy
	By medical professional
	By school counselor
	Alcohol abuse/Substance abuse
	Recent
	History
	At time of death
	Family history of mental health problems
	Engaged in non-suicidal self-injury
History of suicidal ideation and behaviors	Family history of suicidal ideation or attempts
	Family history of suicide
	Decedent's history of suicide attempts
	Decedent's history of suicidal ideation
Physical health problems	Disability
	Other physical problems
Relationship problems	Family problems
	Argument with parents
	Punishment by parents (or threatened punishment)
	Argument with siblings
	Recent move
	Living in blended family
	Thwarted belongingness

Overarching code	Subcode
	Non-specific problems with friends (not school-related)
	Dating partner problems
	Infidelity or accused infidelity
	Jealousy
	Dating partner violence victimization or perpetration
	Recent break-up
	Other un-specified relationship problems
School-related circumstances	Confirmed bullying
	Perceived bullying (e.g., bullying assumed by parents/friends/schoolmates, but not confirmed by school authorities)
	Disciplinary problems at school
	Pressure from parents, teachers, or coaches to perform well in school
	Sports-related problems
	Problems at school, no specifics provided
	Thwarted belongingess
	Physical fighting at school
Other relevant stressors	Recent crisis (occurred within 2 weeks of death or was impending)
	Death/illness of friend or family member
History of adverse childhood experiences	Child physical abuse
	Child neglect
	Child sexual abuse
	Foster home development
Evidence of premeditation	Left a note
	Disclosed intent
	Posted suicidal intent on social media websites
	Texted friends/family about suicide intentions

Table 3

Narrative examples of overarching themes regarding antecedents of youth suicide by ecological level

Ecological level	Overarching theme	Example quotes in support of overarching theme [qualitative codes appear in brackets]
School or social problems	Non-specific school problems	Victim was crying previous day [emotional state—depressed mood] and told her mother it was something at school [non-specific school problem].
	School disciplinary problems	Victim had gotten into trouble at school because of an academic issue and received a phone call home concerning it [school disciplinary problem].
	Bullying victimization	Victim had been bullied for the last two years [bullying victimization]. The parents reported frequent bullying [bullying victimization].
Relationship problems	Family problems (e.g., arguments with parents, recent move, parental divorce)	Victim's mother had yelled at the victim and threatened punishment [argument with parent].
	Dating partner problems (e.g., break-up, argument)	Victim and her boyfriend fought and threatened to break up with each other frequently [ongoing arguing with dating partner].
Individual problems	Mental health problems (e.g., depression, alcohol/substance abuse)	Victim had reportedly consumed an excessive amount of alcohol [recent alcohol abuse] on the day of the fatal event. Victim had received treatment for her depression [mental health problem—depression.
		Victim had had a history of alcohol and marijuana abuse [history of substance abuse].
	History of suicidal ideation and/or self-harm	Cut marks were found on victim's wrists, but it is unknown if they were suicidal [history of self-harm].

Note: The quotes are presented as originally written in the National Violent Death Reporting System narratives to ensure preservation of the original framing and character of the content. Narrative details have been modified non-substantively only to reduce risk of victim identification